Roberts Monitor Speaker System

SS-80 II

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Setting the standard in sound fidelity

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The SS-80II Monitor Speaker

The Roberts SS-80II speaker was created to produce the qualities ascribed to most monitor speakers — accurate, low-distortion, uncoloured musical reproduction.

Independent listening tests indicate the SS-80II speaker fulfills its design parameter. It can handle up to 60 watts average power and provide a programme sound which compares favourably with the finest British and American units. Especially notable is its outstanding stereo imagery.

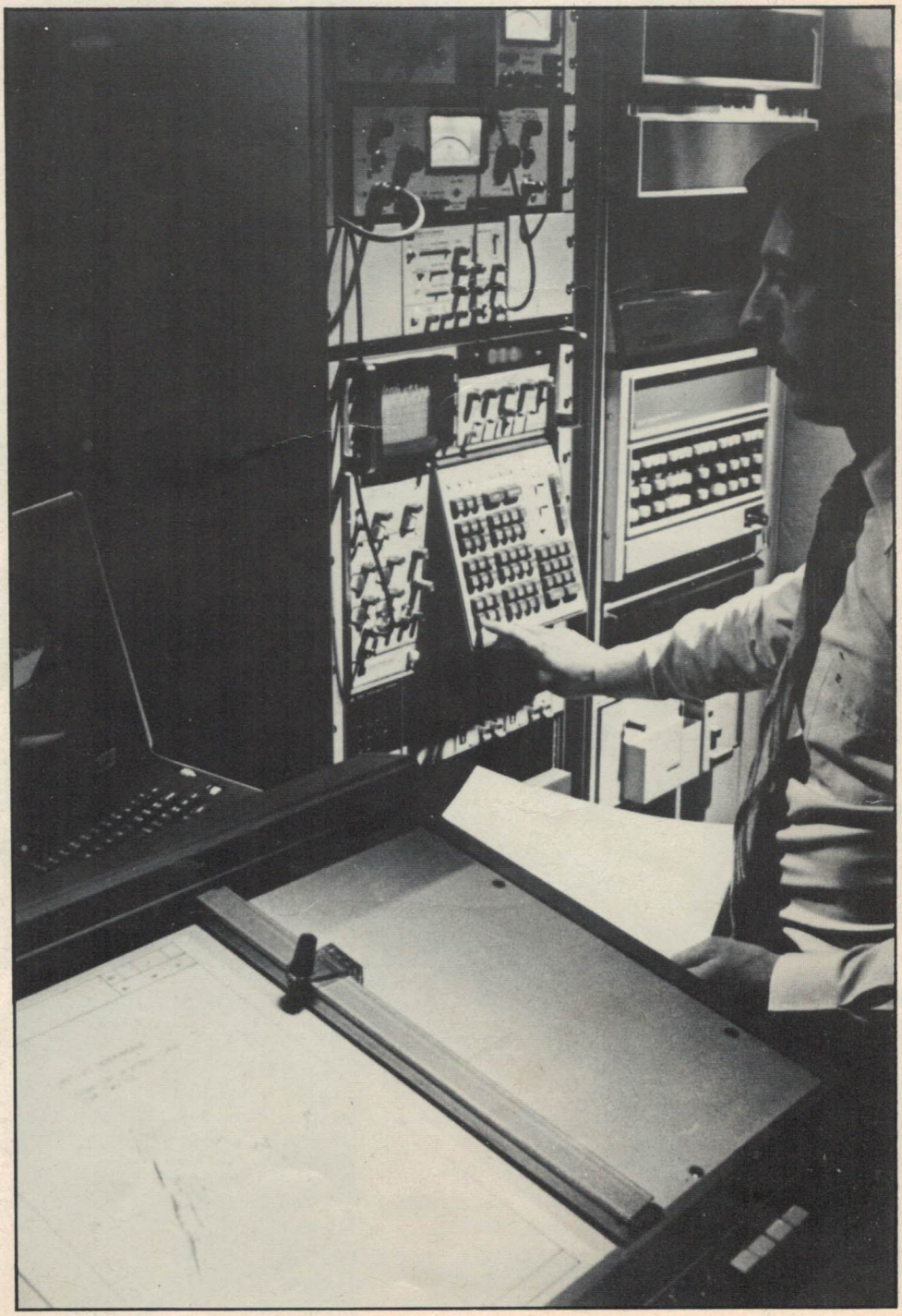
The SS-80II has an exceptionally wide and smooth response and will do full justice to the finest amplifiers available. It is comparatively sensitive and a level of 95dB will be produced for an input of approximately 6 watts. Accordingly, while satisfactory operation will be obtained with fairly low-powered amplifiers, to enjoy the full dynamic range available from modern recordings (direct-cut discs, etc.) an amplifier capable of producing between 20 and 70 watts is recommended. If your listening room exceeds 150 cubic metres and you enjoy high sound levels, your amplifier should be capable of at least 40—50 watts. For amplifiers of continuous average power in excess of 70 watts, care should be exercised, however, the SS-80II is extremely robust and excessive volume levels will usually become unpleasant before putting the speaker at risk.

The SS-80II has already earned a reputation as a superb music reproducer and during its development, many periods of listening and evaluation were carried out. The design was only considered complete when all conflicting factors (frequency and transient response, dispersion, colouration, etc.) had been resolved.

The drive units for the SS-80II have been carefully selected from a wide range of available units and every component used in construction is tested before and after assembly. Each completed speaker is then put through a programme of stringent tests.

The cabinet was designed to enhance stereo imagery, overcome inter-driver cancellation and reduce room influences. The four speaker units have been positioned vertically with the mid-range and tweeter close to ear level. Bass colouration is reduced if the speaker is mounted on the stand provided.

The abundant electro-acoustic features of the SS-80II are perfectly complimented by the fine craftsmanship displayed in the selected-veneer cabinets.



Engineer using digital computer to assess decay characteristics of drive units.

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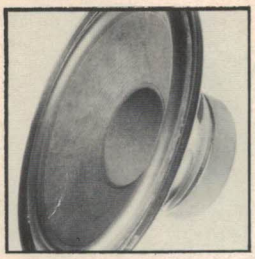
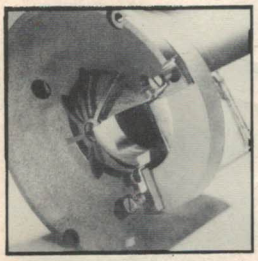
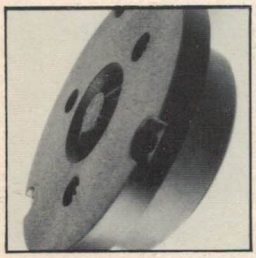
Drive Unit Complement



Bass units: The 204mm bass driver has advantages over larger units because of its low colouration and freedom from objectionable cone break-up. A passive radiator extends the bass response of the driven bass unit, and yields a significant reduction in distortion by increasing the effective cone area and reducing movement of the driven cone. Typically the bass response of these coupled units in their 40 litre sealed cabinets extends to 40Hz, a figure usually attained only by the use of much larger speakers.



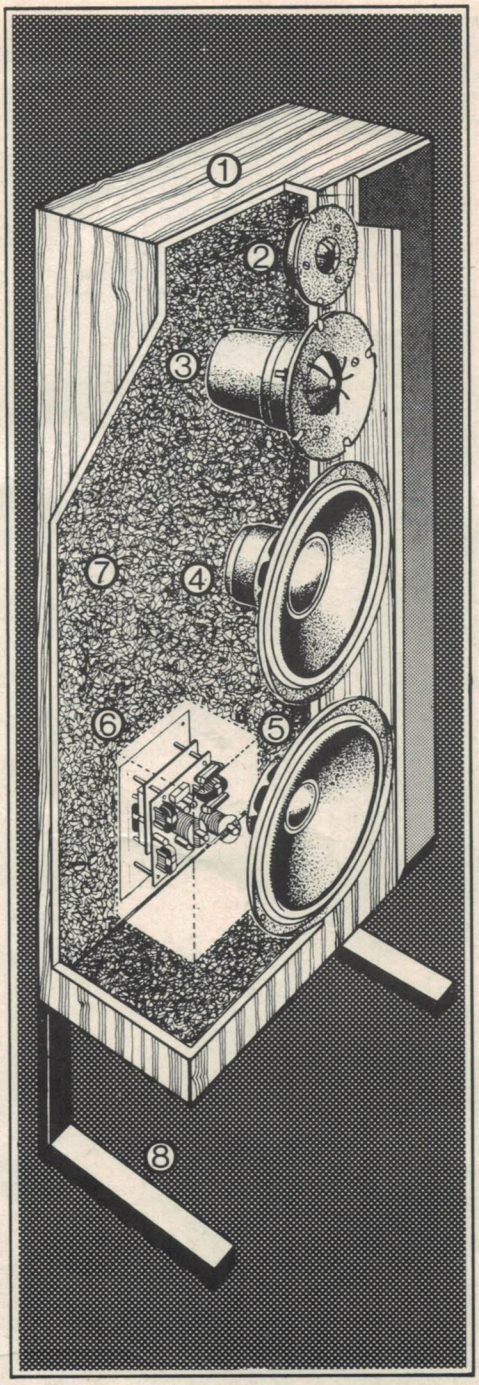
Dome Mid-range: The acoustically enclosed mid-range unit has a soft fabric dome with excellent dispersion characteristics and very low distortion. It operates from 750Hz to 4000Hz, with a response variation of less than ± 1.5dB.



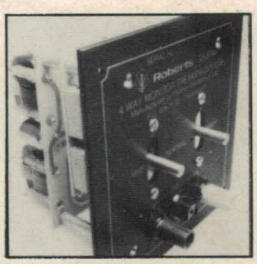
Dome Tweeter: A 25mm soft dome tweeter with excellent dispersion characteristics maintains response to beyond audibility. The dome tweeter also has very low distortion and smooth frequency response (typically ± 1.5dB over the range 4KHz—20KHz.)

The Crossover Network: The smooth operation of the SS-80II system is due in part to the design of the precision crossover unit which couples the three driven units. The crossover network performs two important functions: firstly it provides for rapid shift of drive from one driver to the next at the crossover point and secondly compensates for irregularities in the frequency response of the drivers to obtain a flatter overall response and prevent undesirable interference between the drivers. This technique results in a crossover design which is described as an 'Acoustic Butterworth', the Butterworth referring to the fact that a flat acoustic response is maintained up to the crossover point, and then rapid attenuation in the stop band.

The SS-80II crossover has effective 3rd order characteristics giving the smoothest possible response through the crossover regions and minimal phase irregularities. Passive attenuation networks compensate for differences in the efficiency of the various drive units.



1. Cabinet constructed from high-density customwood for maximum rigidity and suppression of resonances. Narrow front/back depth prevents standing waves being generated.
2. AD0163 soft dome tweeter. Flush-mounting reduces diffraction interference from edges of assembly. Centre diffuser prevents interference effects in dome and maintains flat response to beyond 20KHz. Fabric dome material has negligible colouration compared to polycarbonate and similar materials.
3. AD0211 soft dome mid-range. Powerful magnet assembly ensures low distortion and excellent transient response. Damped fabric dome provides very flat response and negligible colouration. Concave front and flush mounting gives minimum diffraction and wide dispersion ensuring accurate stereo imaging throughout the listening area.
4. AD80651 high efficiency bass driver with latest pulp cone technology. Rubber roll surround and high compliance spider allows large linear movement. Powerful 1.2 Tesla magnet provides optimum damping and efficiency.
5. AD8001 passive radiator with carefully controlled compliance and mass to perfectly complement the bass driver. Low end response is extended without causing 'boomy' reproduction.
6. 14 element precision crossover assembly with protection fuse and mid-range/tweeter level controls. Iron cored chokes in bass section maximise amplifier damping. Mid-range bandpass section provides correct response with high power handling capacity. Polyester capacities for tweeter crossover reduce losses and ensure accurate crossover point.
7. Acoustic damping material gives a system Q of 0.8 for a critically damped response with the -3dB point at 42Hz.
8. Stands provide correct height for listener in seated position. They also de-couple cabinets from room if placed in corner position.



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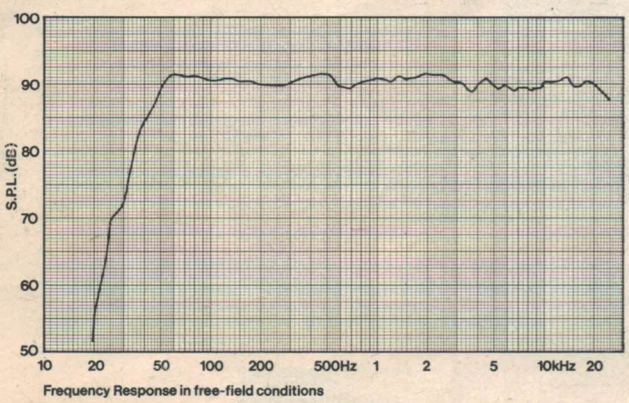
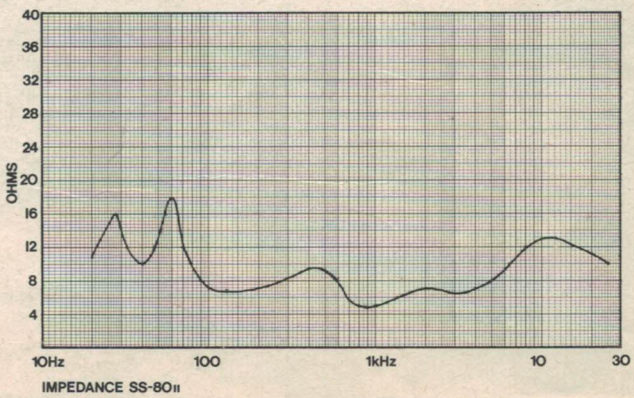
Specifications

Drive Units	25mm soft dome tweeter 50mm soft dome mid-range 204mm high compliance bass driver 204mm passive radiator
Impedance	Nominal 7 ohms
Crossover Frequencies	
Passive	150Hz
Bass/mid	750Hz
Mid/HF	4000Hz
Frequency Response	35—24,000Hz @ –10dB 42—22,000Hz @ –3dB 45—20,000Hz ± 2dB @ 1 metre, mic on vertical axis at midpoint between tweeter and mid-range.
Sensitivity	6.9 volts for 95dB @ 1 metre
Power Handling	60 watts continuous average 100 watts peak programme power Suitable for amplifiers with continuous average outputs between 20 and 100 watts
Distortion	less than 0.5%, 200Hz—20KHz less than 1.5%, 40Hz—200Hz Measured at input of 6.9 volts (6 watt, 8 ohms) for an S.P.L. of 95dB
Dispersion	
Vertical	±1.5dB over ±10° of centre window
Horizontal	+0,–3dB over ±30° of centre window Measured over frequency range 30Hz—15KHz
Protection	The speaker is protected from gross overload by a 2.5a fuse mounted on the back panel.
Height (without stands)	770mm
Width	340mm
Depth	240mm
Volume	42 litres
Weight	22kg (packed)
Finish	Standard: selected wood veneer Special: black satin

All specifications subject to change for improvement without notice.



Frequency Response in free-field conditions



IMPEDANCE SS-80II

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Designed and manufactured by
PANTHER ELECTRONICS LIMITED
392 St Asaph Street, Christchurch, New Zealand.
P.O. Box 1102, Christchurch. Telephone 64-544.

Design: John Barry Graphics

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Operating Instructions

Electrical connection

Twin leads are required to connect each speaker to the amplifier. Provision has been made for either banana plugs or bare wires. The terminals at the rear of the speakers are colour-coded — yellow positive, green negative — and these are to be connected to the positive and negative terminals at the back of the amplifier.
It is best to keep the series resistance of connecting cables as low as possible by using reasonably heavy cable. For under 10 metres Trurip 16/0.2 mm is recommended. Trurip 24/0.2 mm is suited to connections of more than 10 metres.

Phasing

The central image of stereo reproduction relies on 'in phase' signals of equal amplitude, and it is necessary that all components are correctly connected. If other components of the system have been correctly wired, the method of speaker connection, as detailed, is also correct. The following test is recommended.
Feed both channels with a monophonic source — mono radio or record — or by switching amplifier to the 'mono' mode. If phasing is correct, the sound should appear to emanate from a small central area between the two speakers. If incorrect, the sound will be spread between the two speakers. To correct, reverse one pair of speaker leads.

Guarantee

The speakers are guaranteed against defects in materials and workmanship for 12 months from the date of purchase subject to conditions outlined on the warranty card. Transport costs to and from the manufacturer are to be met by the purchaser.

Speaker location and listening room

Room characteristics play an important part in the sound of any speaker system. Two factors influence this — the basic dimensions of the room and the amount of furniture and soft coverings. The dimensions of the room and the amount of furniture affect lower frequencies, whilst the higher ranges are affected by soft furnishings, carpet and wall coverings.
All rooms have naturally-occurring resonances related to their dimensions. Generally these occur below 200Hz and can cause irregularities in bass response. The ideal listening room should be large with all the dimensions different. The best practical choice is a rectangular shape with the speakers facing the longer dimension as this will decrease the number of resonances and reduce their amplitude.
There is also the factor of 'room gain' — the walls of a room, especially the corners, increase the amplitude of the lower frequencies relative to the mid and high frequencies. This effect can, in part, be compensated for in the basic design of the speaker (speakers mounted on stands), but careful positioning is necessary to obtain optimum performance.

Practical siting

It is recommended that in initial wiring, a flexible lead is used, and the position of the speakers experimented with. Chose a familiar, well-balanced record. With the amplifier controls set on 'mono' and the balance control set to drive one speaker, chose the best location for it.
Bass response within the bottom two octaves (30Hz—120Hz) will vary with position relative to the corners of the room. Minimum bass will occur when the speaker is free-standing in the middle of the room.
Midrange and treble response may become 'peaky' or hard if the speakers are facing uncovered flat surfaces, e.g. walls, or large areas of glass.
Reverse the balance control and locate the second speaker in a position which gives the same tonal balance as the first. Generally this will be in a symmetrical position in the room relative to the first speaker. The location of the speakers should then be adjusted, if necessary, for stereo reproduction — e.g. speakers should be placed so that the listener is near the apex of an equilateral triangle.
A further consideration is whether to place the speakers parallel to the wall, or to angle them toward the listening area. The SS-80II system gives considerable latitude because of its wide dispersion of sound, but as a general rule the angle by which the speakers should be turned is increased the further they are apart, and the closer the listener is seated to them.

Adjustment of midrange and tweeter attenuators

The crossover and attenuators system is designed so that a flat response, as measured under anechoic conditions, will be obtained when the attenuators are set to the 'normal' position.
In most rooms, some loss of high frequencies and gain of low frequencies will occur. When the site of the speakers has been chosen, the attenuators may be adjusted to fine tune the overall tonal balance. Once set, they should not require further adjustment. Broad changes of response are best made by adjustment of amplifier tone controls. Large adjustments should not be necessary.

Amplifier Volume and tone control settings

The correct use of these contols is necessary to obtain realistic reproduction. If possible, set the volume control to a position which re-creates the sound level experienced at a typical live performance. Altering the original level seriously affects the tonal balance. If set lower, the bass and to a lesser extent the treble, will be deficient. If louder, the reverse will be the case.
Because of the accuracy of the SS-80II, imperfections in other components, particularly high frequency distortion in record-playing equipment may cause some distress if the records are worn. In such cases, a small amount of treble cut in the amplifier (2-4dB @ 10KHz) may give less fatiguing reproduction.

Care and maintenance

Treat these cabinets as you would any fine furniture — do not leave them for long periods in direct sunlight, or allow them to become wet. Do not use cutting abrasive polishes on the polished surfaces. Stains can be removed with a soft cloth, warm water and mild soap. Dry with a soft cloth.

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